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AUTHOR Dobbs, James Mark
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ABSTRACT

This paper is concerned with changes which have been proposed in the major current diagnostic system regarding paranoid schizophrenia. It is noted that the proposed changes to the Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSM-III) would remove paranoia as a schizophrenic subtype and institute a spectrum description of the paranoid disorders ranging from paranoid personality to the current paranoid schizophrenia diagnosis. The paper examines the historical roots of the problem, classical definitions of paranoia, and current cognitive research using schizophrenia subtypes that pertain to the diagnostic changes. Thirty journal articles from 1970 to 1986 that pertain to schizophrenic subtype cognitive functioning are categorized under the headings of: (1) abstract thinking; (2) associative thinking; (3) attribution; (4) cognitive styles; (5) delusions; (6) discrimination tasks; (7) distraction studies; (8) language; (9) reaction time; and (10) hospitalization data. Each article is listed and discussed by category and notable findings are indicated. A summary is presented for each category. Methodological critiques are offered and only those studies with adequate experimental controls are included in the discussion section, which attempts to synthesize the data relative to the diagnostic questions. The benefits of the proposed changes in DSM-III classification of paranoia are examined with respect to diagnosis, treatment, and research. (NB)

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Doctoral Research Paper
for the Degree of Doctor of Psychology

ROSEMEAD SCHOOL OF PSYCHOLOGY

BIOLA UNIVERSITY

JAMES MARK DOBBS

1986

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PARANOID SCHIZOPHRENIA: ASSESSING THE VALIDITY OF THE DIAGNOSTIC SCHEMATA

BY

JAMES MARK DOBBS

A doctoral research paper submitted to
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1986

PARANOID SCHIZOPHRENIA: ASSESSING THE VALIDITY OF THE DIAGNOSTIC SCHEMATA

BY

JAMES MARK DOBBS

APPROVED:

Robert Blanzolen
First Reader

Date 10/17/86

John Carter
Second Reader

Date 10/17/86

APPROVED:

Dean

10/17/86
Date

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Abstract

Changes have been proposed in the major current diagnostic system (DSM III) regarding paranoid schizophrenia. The proposed changes are to remove paranoia as a schizophrenia subtype and institute a spectrum description of the paranoid disorders ranging from paranoid personality to the current paranoid schizophrenia diagnosis. This paper looks at the historical roots of the problem, classical definitions of paranoia, and current cognitive research using schizophrenia subtypes that pertain to the diagnostic changes. In addition, the benefits of such a change are examined with respect to diagnosis, treatment and research.

Paranoid Schizophrenia: Assessing the Validity

Of the Diagnostic Schemata.

Since its appearance in 1980, the Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSM III, American Psychiatric Association, 1980) has become a topic of hot debate. Through it the American Psychiatric Association has attempted to impose order and conformity on the use of diagnostic labels. To do this they resorted to behavioral and descriptive criteria that often overlook theoretical and empirical data on the various disorders. In general, the DSM III has been criticized because some of the categories lack specificity and others are too specific and the labels are generally not helpful in formulating modes of treatment, particularly when the modes of treatment are theory bound (Goldstein, 1985). As a result clinicians, theoreticians, and researchers often resort to older and different nomenclature in the literature because they communicate more clearly (Klein, 1982). The DSM III has been relegated for use primarily as a standard means of communicating with health insurance companies.

The DSM III presents several difficulties in diagnosing certain disorders. It uses a behavioral-descriptive approach that can simplify diagnosis. However, some symptoms used for diagnosis are by nature more subjective or internal and do not manifest behavioral symptoms. Further, varying types of mental disorders may produce similar behavioral symptoms but may in fact be separate diagnostic entities. Due to the DSM III's behavioral bias, selecting an accurate diagnostic label can become difficult, and at worst physicians and

psychotherapists may be led to give less than optimum forms of treatment.

Some may argue that diagnostic systems are not crucial to the treatment of mental disorders and that the DSM III in its present form is accurate enough for the current state of psychotherapy. However, diagnostic systems often reflect how we view pathology. If we are using a diagnostic system that describes pathology in a certain frame, we will use that frame in understanding clients. The degree to which the diagnostic system accurately describes the pathology of the client will in part determine how accurately we view, listen to, and understand our clients. It is in the best interests of treatment to derive a system of diagnosis that is descriptively accurate.

Though the DSM III was based somewhat on research findings (American Psychiatric Association, 1980, p. 2), new research may shed more light on appropriate diagnostic labels and criteria. Of interest to this paper are proposed changes in two of the three main types of psychotic disorders listed in the DSM III. The DSM III distinguishes among schizophrenic disorders, paranoid disorders, affective disorders (containing both psychotic and neurotic disorders), and a miscellaneous category: "Psychotic disorders not elsewhere classified" (p. 199). The schizophrenic category includes three main subtypes of schizophrenia: disorganized, catatonic, and paranoid (throughout this paper paranoia will be used generically, paranoia as a subtype will be labeled "paranoid schizophrenia", and the DSM III category of delusional paranoia will be labeled "psychotic paranoia"). By examining research

findings, some (Munro, 1982; Zigler & Glick, 1984) are suggesting that paranoia may be viewed more accurately as a spectrum of disorders rather than discrete conditions or a schizophrenic subtype. This concept is supported in part by the multi-axial approach of the DSM III. However, the duration and age of onset criteria in the DSM III and the discrete categories used tend to work against a continuum or spectrum model. These criteria artificially limit the scope of pathology and exclude less severe forms of both schizophrenia and paranoia.

The purpose of this paper is to examine the theoretical and empirical evidence for changing the diagnostic schemata. Specifically, the efficacy and plausibility of changing the DSM III category of paranoid schizophrenia will be examined. The proposed change would remove paranoia as a schizophrenia subtype and establish a spectrum of paranoia disorders that range in severity of pathology and symptoms. The paper will begin with a brief synopsis of diagnostic history pertinent to paranoia. Then definitions of paranoia will be discussed including those found in the DSM III. Cognitive research comparing paranoid and non-paranoid subtypes of schizophrenia will be examined for its relevance to changing to a spectrum model of diagnosis. A discussion will follow on the impact such a change would have on future research and clinical work.

The History of the Problem

The history of this problem dates back several decades to when diagnostic labels were first being devised. Kraeplin initially coined the term dementia praecox based on observation of psychotic behavior

(Goldstein, 1985; Magaro, 1981). Kraeplin's diagnostic system was primarily atheoretical and tended to diagnosis severe, long-term patients with a poor prognosis. Bleuler, a few years later included a broader range of pathology and was the first to use the term schizophrenia. His system diagnosed schizophrenia based on four primary areas of functioning: defects in association ("loose associations"), defects in affect (flat or blunt affect), detachment from external reality or autism, and ambivalence (incongruent or inappropriate affect).

Originally forms of paranoia marked by hallucinations were considered subtypes of schizophrenia (Cromwell & Pithers 1981). Cromwell and Pithers attribute this trend to the original Kraeplin and Bleuler systems:

> These two clinicians set in place the idea . . . that if paranoid delusions occurred with other symptoms of schizophrenia the schizophrenia diagnosis would have precedence and the paranoid symptoms would constitute a subgroup. (p. 674)

This view has been basically accepted with few questions. The first two Diagnostic and Statistical Manuals (American Psychiatric Association, 1952, 1968) borrowed heavily from Bleuler and psychoanalytic thinking (Goldstein, 1985). With DSM III the attempt was made to exclude theoretical considerations and so a more behavioral approach was used to delineate diagnostic categories. This has resulted in categories of schizophrenia that are more narrow and exclusive than was previously the case. It has also made it more difficult to accurately diagnose people who are on the fringe of psychotic behavior (Goldstein, 1985).

The literature is full of references to researchers and mental

health practitioners who are dissatisfied with the current diagnostic system in use with the DSM III (Carpenter & Stephens, 1979; Cromwell & Pithers 1981; Kendler, 1984; Zigler & Glick 1984). As a result, many alternative diagnostic systems have been developed to aid in research and psychotherapy. Klein (1982) made comparisons between seven diagnostic systems on the three dimensions of premorbid adjustment, paranoid symptoms, and chronicity. The seven systems (secondary references as cited in Klien, 1982) investigated were the Research Diagnostic Criteria (Spizer et al., 1978), DSM III (American Psychiatric Association, 1980), the Flexible System from the World Health Organization's International Pilot Study of Schizophrenia using both 5 and 6 point cutoffs (Carpenter et al., 1973), The Feighner criteria modified by Tsuang and Dempsey (Feighner et al., 1972), the Taylor, Greenspan, & Abrams criteria (1979), and Schneider's first-rank symptoms (as defined by Carpenter & Strauss, 1973). He found that people with poor pre-morbid adjustment and high chronicity were most likely to be diagnosed schizophrenic. Those with paranoid symptoms were not clearly diagnosed schizophrenic. Most importantly, Klein found a very poor inter-system reliability. In part this points out the difficulty of determining diagnostic sets.

In a similar vein Goldstein (1985) warns:

> DSM III should be accepted as only one system, among many, for making the diagnosis of schizophrenia. It does not provide construct validity, it identifies only the most chronic schizophrenics, it does not provide either genetic or psychodynamic understanding, and it implies therapeutic nihilism. When one evaluates a patient for schizophrenia, DSM III should be consulted but not considered the final word. (p. 150)

The consensus from most reviewers seems to be that the DSM III is not completely satisfactory in making conclusive diagnoses of schizophrenia and schizophrenia subtypes (e.g., paranoid schizophrenia). The strict behavioral/symptomatic approach does not lend itself to making clear and unambiguous diagnoses.

Definitions of Paranoia

Undoubtedly, some of the confusion over establishing diagnostic criteria for the paranoid disorders comes from a long history of imprecise usage of the term. Most dynamic perspectives on paranoia equate certain defensive styles to the disorder, most notably the defenses of projection and denial (Cameron, 1963; MacKinnon & Michels, 1971; Meissner, 1978). Most commonly equated with paranoia are delusions of persecution. Cameron (1963) adds delusions of grandeur, jealousy, and erotic delusions. Bonime (1982) adds the symptom of hidden depression to this descriptive list.

Most theorists view the paranoid delusional system as being an elaborate projection. The paranoid is seen as being unable to tolerate negative feelings of inferiority, depression and guilt. These feelings are put onto others so that others are seen as having the negative traits. Denial works alongside of projection and is, as the name suggests, a flat denial that a person has certain traits (e.g., anger) or does certain behaviors. Both denial and projection are viewed in analytic thinking as primitive defensive systems. These defenses are thought to appear earlier in psychological development and are relied on more heavily as later defenses become inoperative in mental disorders.

In paranoia, it is thought that the healthier defenses of intellectualization and repression are not completely functional. The paranoid reverts to the earlier defenses in an attempt to hold off thoughts and feelings that do not fit with the person's conception of himself or herself. Paranoid delusional systems can be seen as extreme or well organized examples of projection and denial. The paranoid develops a delusional system to support the projections and make them seem externally believable.

In a 1982 article Bonime related paranoid symptomatology to that of the depressive. He points out the similarities of the two disorders in the following symptoms and dynamics: etiology (deprivation of love and emotional restriction in childhood), manipulativeness, resistance to coercion, unwillingness to make consistent use of personal resources, unwillingness to enhance the lives of others, anxiety, grandiosity, and anger. He distinguishes paranoia from depression in that paranoia displays a greater tendency of persecutory delusion, paranoid grandiose elements are more delusionally expressed, and paranoids have more explicit ideation of hostility toward and from others.

The DSM III maintains that the primary symptom of paranoia is a delusion. Specifically, the DSM III lists persecutory or jealous delusions with affect congruent with the delusion. Absent from the DSM III paranoia diagnosis are the defense mechanisms of projection and denial although delusions all but presuppose these defenses. The DSM III allows for depressive and manic symptoms if they occur secondarily to the delusional systems. It appears that the sole criterion

separating psychotic paranoia from the paranoid schizophrenic is the presence or absence of hallucinations. The primary distinction between paranoid personality and psychotic paranoia in the DSM III appears to be the absence in the former of a full delusion. The DSM III's description of paranoid personality is pervasive, unwarranted suspiciousness and mistrust of people, hypersensitivity, and restricted affect (perceived by others as cold or unemotional).

While most practitioners, theorists, and researchers would probably agree to the above definitions of paranoia, many would still use the definitions differently and identify different people as being paranoid. The broad nature of the symptomatology is in part responsible for this problem. Some would consider mere suspiciousness enough to warrant a diagnosis of paranoia while others would look for grandiose or persecutory delusions. All of these symptoms do seem to have common elements and are often linked together in theoretical systems (Meissner, 1978). Further complicating diagnostic issues is the appearance of suspiciousness in other types of pathology such as schizoid and narcissistic personalities at various times during treatment. The similarities between different DSM III forms of paranoia along with symptomatic similarities to other diagnostic categories suggests the possibility of viewing paranoia as a spectrum disorder.

Paranoia as a Spectrum Disorder

Recently there has been movement toward viewing schizophrenia and paranoia as spectrum disorders. It is hoped that by placing diagnostic categories within a spectrum of pathology that clearer statements on the

severity, prognosis, etiology and symptomatology of mental illnesses can be made. Munro (1982) proposed a paranoid spectrum using DSM III terminology that ranges in severity from paranoid personality to paranoia to paranoid schizophrenia to other types of schizophrenia. Likewise, Meissner (1978) viewed paranoia as a process that ranges in severity from a personality disorder to a full delusional disorder with psychotic hallucinations. Zigler and Glick (1984) removed paranoia from the schizophrenic disorders and placed it in a continuum with the psychotic affect disorders. Magaro (1981) proposed a two dimensional model with the level of schizophrenic pathology along one axis, and the level of paranoia along another, orthogonal axis.

A spectrum disorder such as paranoia can be used as a diagnostic scheme in itself or in tandem with other spectrum disorders to give a more complete diagnostic picture. In this way a more precise description of a person's functioning and pathology could be made. This is being done already in part by using the DSM III multi-axial approach and by the inclusion of mental status data in case reports and clinical diagnostic assessments. However the current system in use in the DSM III was not intended to be spectrum oriented but has attempted as much as possible to maintain discrete diagnostic sets. A change to a spectrum diagnosis would perhaps make the selection of research subjects more complicated by enlarging the number of labels available for describing each subject. On the other hand if the spectrum approach allows for finer distinctions in diagnoses, then research inclusion criterion could be narrowed and the quality of research improved.

In summary, several research projects involving paranoid and non-paranoid schizophrenics have reported data suggesting some fundamental differences between these two types of schizophrenia. Munro (1982) has suggested that paranoid schizophrenia is a less severe form of schizophrenia. Further, sufficient differences may exist between patients with the two labels that paranoid schizophrenia might better be relabeled as a more severe form of a paranoid delusional disorder, dropping the schizophrenia form of the disorder altogether (Zigler & Glick, 1984). The purpose of this paper is to examine the empirical evidence for changing the diagnostic schemata of the paranoid disorders and to examine the usefulness of such a change from theoretical, clinical, and research standpoints.

Schizophrenia Subtype Research

The amount of research that has been conducted with schizophrenics is very large. No single paper or even book could hope to include all of the research relevant to any single topic on schizophrenia. It is hoped that by taking a sample of the more recent research some conclusions can be drawn on the subtyping problem and address the issues surrounding the changes that many are suggesting in the paranoid schizophrenia diagnosis.

The research involving schizophrenia has been undergoing an interesting metamorphosis over the past twenty or thirty years. Initially, most research involving schizophrenia made comparisons between non-specified schizophrenics and normals or non-psychotic controls. Most of the current schizophrenia research separates paranoid

schizophrenics from non-paranoid schizophrenics into separate subject groups. Instead of a two-way comparison between schizophrenics and normals, many research psychologists make three-way comparisons between paranoid schizophrenics, non-paranoid schizophrenics and normals. The two groups of schizophrenics give significantly different results and react to research situations in diverging ways. In an effort to eliminate contamination from the data, the two subtypes are kept separate.

It is not surprising that two subtypes of schizophrenia react differently in experimental situations. There would be little validity in separating the two as subtypes if they did not. The question being asked here is whether these differences are great enough to warrant changing the way we think about schizophrenia, whether the subtypes of schizophrenia belong together at all. Most research is aimed at discovering how schizophrenics process information. The basic question of this paper is whether actual differences in information processing between schizophrenic subtypes fit the diagnostic schemata or if paranoid schizophrenia is more distinct from other schizophrenia subtypes than the schemata suggest.

This paper will focus primarily on schizophrenia subtype research from 1970 to 1985 involving cognitive processes. Previous review articles (Carpenter & Stephens, 1979; Cromwell & Pithers, 1981; Magaro, 1981; Meissner, 1978; Munro, 1982; Zigler & Glick, 1984) have included earlier literature in their surveys and it is hoped that by narrowing the scope of the present work from 1970 to 1985 that some redundancy can

be avoided. A few research articles before 1970 will be included because of their relevance.

Because schizophrenia and paranoia are considered thought disorders, the research on cognitive processes is the most relevant in determining diagnostic divisions in the two disorders. Cognitive research is defined broadly here; thus a wide spectrum of cognitive research pertaining to schizophrenia is included. Schizophrenia research that does not separate paranoid and non-paranoid types of schizophrenia is of little value to the present question and will not be included. In addition, some hospitalization data will be included as it adds some relevant demographic data to the present diagnostic question.

Method

Two computer literature searches were conducted using the Psychinfo database of psychological journals. The parameters of the search were on articles from 1970 to present, and on the words schizophrenia, paranoia, and nonparanoid. Foreign language journals were excluded from the search. This yielded a data sample of 710 possible journal articles. From this number, all dissertation citations were excluded. Titles were then selected that appeared relevant to cognitive schizophrenic research. The dataset was further narrowed down by including only those articles that made direct experimental comparisons between paranoid and nonparanoid schizophrenic subtypes regardless of the inclusion or exclusion of other subject groups. This process has yielded approximately 30 journal articles from 1970 to present in the area of schizophrenic subtype cognitive functioning. It

is believed that this sample of journal articles is a complete set of the research that has been conducted on schizophrenic cognitive processes within the above parameters.

In order to further organize the literature, each article was roughly categorized as to the type of experimental tasks, questions, and cognitive functions being examined. The purpose of the categories was to simplify analysis of the data, not to impose rigid or exact research categories. The categories used are as follows: Abstract thinking, associative thinking, cognitive styles, delusions, discrimination tasks, distraction studies, language, and reaction-time.

Subject Variables

The literature obtained in the above sample used a wide variety of criteria for subject inclusion. Most used more than one criterion or scale to discriminate between schizophrenic subjects and non-schizophrenic subjects. Most included diagnosis by a clinician and a few relied solely on clinical judgement to arrive at a diagnosis.

Many studies further divided the schizophrenia subtypes into poor vs. good premorbid adjustment groups, acute vs. chronic groups, process vs. reactive groups, and long vs. short hospitalization groups. These variables have been found by many researchers and clinicians to be related to differential performance by schizophrenics on various tasks. In some studies, they are the focus of the research while in others they are used to measure potentially confounding variables. The definitions of these variables, both theoretically and operationally often overlap in the research. Some have suggested that the process-reactive

dimension, length of hospitalization, premorbid adjustment and chronicity are actually variations of the same dimension (Yates & Korboot, 1970). With the exception of premorbid adjustment, these variables describe the individual's severity and duration of psychotic pathology.

Experimental Quality

No study was excluded because of methodological weakness. Some of the studies were, however, methodologically weak and these will be noted in the analysis and synthesis of the dataset. Each article will be listed and discussed by category with notable findings indicated. A summary will be presented for each category. Following a presentation of all studies, methodological critiques will be offered and only those studies with adequate experimental controls will be included in the discussion. In the discussion section, attempts at synthesizing the data relative to the diagnostic questions being asked will be made.

Abstract Thinking

Watson (1976) ran a series of correlations to determine if relationships exist between subtype diagnosis, process style, duration of illness and duration of hospitalization and abstract thinking deficits. Subjects were included based on clinical diagnosis (no formal research criteria used). Process style was determined using the Ullmann-Giovannoni Process-Reactive Scale (1964, cited in Watson, 1976). Length of illness was determined by the elapsed time from the initial hospitalization. The ability to abstract was tested with the Gorham Test, forms I, II, and III (1956, cited in Watson, 1976) in which the

meanings of proverbs are abstracted from the proverbs themselves. Inability to abstract related most strongly to the process-reactive dimension (mild correlation of $r = -.29$, $p < .05$). Reactive schizophrenics were found to have lower abstraction ability than were process schizophrenics. No relationship between subtype and the ability to abstract was found.

Associative

The associative studies are grouped together because they provide data on the differences in associative thought interference between the diagnostic groups. This research is born out of the classical diagnostic symptom of loose associations in thought and speech in schizophrenics. Brennan and Hemsley (1984) predicted that paranoid schizophrenics would produce stronger associations and non-paranoids weaker associations between unrelated lists of words than would normals. It was hypothesized that paranoids would have stronger internal schema for making illusory correlations (relating unrelated words) than would non-paranoid schizophrenics. Their findings broadly supported their hypothesis but not overwhelmingly so. Paranoid schizophrenics believed the words were related 43.5% of the time, non-paranoid schizophrenics 34.1% of the time (failure to make illusory correlations), and normals believed the words were related 39.9% of the time. Between groups levels of significance were not reported in this study for these percentages.

Klinka and Papageorgis (1984) used associative interference (the Rattan and Chapman Associative Interference Vocabulary, 1973, cited in

Klinka & Papageorgis, 1984) as a measure of cognitive deficit. It was hypothesized that non-paranoid schizophrenics would perform worse than paranoid schizophrenics whose performance would approach non-schizophrenic psychiatric controls. Klinka and Papageorgis divided subject groups by diagnosis and length of hospitalization. Associative interference was found in the non-schizophrenic subjects as well as the schizophrenic subjects. A main effect of chronicity was found in that those with longer hospitalizations regardless of diagnosis were found to have greater associative interference, $F(1,83) = 2.69$, $p < .05$. Paranoid schizophrenics showed less interference than did non-paranoid schizophrenics, $\chi^2(1,N=60) = 11.42$, $p < .001$; although cautions on generalization were given because the research criteria for paranoid inclusion was deemed more stringent than normal clinical diagnostic procedures.

Sengel, Lovallo, and Pishkin (1984) also found that vulnerability to associative distracters (again using the Rattan Chapman) is more related to the severity of the thought disorder than to a specific diagnosis. Using the Brief Psychiatric Rating Scale (Overall & Gorham, 1962, cited in Sengel et al., 1984), Sengel et al. found the severity of pathology to be similar for paranoid schizophrenics, non-paranoid schizophrenics, and manics, $F(2,17) = 1.38$, $p < .25$, and found no significant differences between these groups in associative errors $F(2,18) = 1.36$, $p < .20$.

The results of these three studies are mixed. Paranoid schizophrenics tend to have more rigid or fixed associations while both

paranoids and non-paranoid schizophrenics as well as other diagnostic groups tend to suffer equally from associative distraction. Chronicity appears to be more of a factor in loose thinking than does either subtype diagnosis or a diagnosis of schizophrenia.

Attribution

Shaver et al. (1984) set out to test the feasibility of using cognitive attribution therapy on schizophrenics. They found that paranoid schizophrenics were significantly different from non-paranoid schizophrenics in making responsibility attributions, $F(4, 104) = 4.16$, $p < .01$, and that paranoid schizophrenics showed patterns similar to normals in previous research (no statistics reported).

In a second study Shaver et al. (1984) investigated how the presence of threatening stimuli would affect the performance of paranoid and non-paranoid schizophrenics in making causal and blame attributions. Using Heilbrun and Norbert's (1971) audio tape of a mother censoring her son, subjects were administered three tasks designed to measure over-all cognitive performance in the presence and absence of the tape (a replication of Heilbrun and Norbert's study). The tasks were color naming, reading a word and naming the color of ink the word was printed in. Results were mixed on the replication part of the study and this was seen as a failure to replicate. On color naming, the performance of the paranoid schizophrenics deteriorated in the presence of the threatening stimuli while the performance of the non-paranoid schizophrenics improved, $F(1,28) = 5.95$, $p < .05$. In the reading task, both groups deteriorated in the presence of the tape (main effect for

the presence of the tape, $F(1,28) = 4.37$, $p < .05$) and there were no differences found for the print color naming (no statistics reported). For the attribution part of the experiment, no differences in causal or blameworthiness attributions were found between the paranoid and non-paranoid schizophrenics (no statistics reported). Shaver et al. added that it was likely their measures of differences in attributional styles were not sensitive enough to discern the subtype differences. The paranoid subjects in this study were found to be reactive on the Ullmann-Giovannoni scale while the schizophrenics were found to be process types. While the authors do not speculate on this, the difference in the process-reactive dimension may have confounded the findings of this study.

The implications of these two studies for the diagnostic question of this paper are not clear. However, the data seem consistent with the hypothesis that paranoid schizophrenics operate with a more fixed schematic structure or a more organized (less pathological) cognitive system than do non-paranoid schizophrenics. However, the second attribution study suggests similarities in attributional styles and cognitive processes under threatening or stressful situations.

Cognitive Styles

There were three studies that did not fit in any one type of research or specific cognitive question. These studies (Hamlin & Lorr, 1971; Lazar, 1985; and Moore, 1971) assessed a variety of subject variables, diagnostic divisions, and cognitive functions in an attempt to find variables that will predict diagnosis. Hamlin and Lorr chose

30 variables measuring a variety of cognitive abilities and social functions (e.g., reaction-times, WAIS digit symbol, vocabulary, social concepts). All but two successfully distinguished diagnostic groups (normals, neurotics, paranoid schizophrenics and non-paranoid schizophrenics) to the .001 level of significance. From these 30 variables, 15 were selected based on their relative objectivity (as opposed to clinicians' judgement). These 15 objective variables (3 reaction-time variables, 8 cognitive variables, and 4 social content variables) were able to reliably distinguish normals from psychotics and neurotics from all other groups, using a discriminant function analysis. Variables were able to discriminate psychotics from neurotics and paranoids from nonparanoids. The variables able to discriminate best were those involving reaction-time ("retardive variables") and those involving cognitive constructs (vocabulary, associative structures, and meaning abstraction).

Lazar and Harrow (1985) set out to assess the importance of cognitive functioning and primary process thinking in paranoids and nonparanoids according to the phase of their disorder (acute vs. post-hospital). In general the two subtypes were compared to each other on severity of thought disturbance at the two phases of treatment. Paranoid schizophrenics showed more overinclusive thinking than non-paranoid schizophrenics at both phases of the illness ($p < .05$). During acute phases, the non-paranoid schizophrenics tended to show more primary process thinking (using the Rorschach delta variable as a dependent measure, $p < .06$), and poorer reality testing (Rorschach poor

form responses, $p < .15$), though both of these differences did not reach significance. At the post-hospitalization stage paranoids showed more integrated thinking (less pathological) than did the nonparanoids (statistics not reported). Stage or phase of illness was found to explain more variance than did diagnostic subtype (statistics not reported). In general this study tends to show schizophrenic subtypes as having more or less equivalent functioning at acute phases, paranoid schizophrenics having better functioning at post-hospitalization phases, uand paranoids having more fixed cognitive styles throughout. However, this study suffers from inadequate statistical reporting and these results are open to criticism.

Moore (1971) made a series of comparisons between cognitive style measures and diagnostic subtypes (paranoid schizophrenics and non-paranoid schizophrenics divided by subtype diagnosis and the reactive-process dimension). The measures used to assess cognitive style were the embedded-figures test (Witkin et. al 1962, cited in Moore, 1971) The Silverman scanning procedure (Silverman, 1964), and Pettigrew's category width (Pettigrew, 1958, cited in Moore, 1971). The category width task (designed to test for errors of omission vs. commission and under-inclusion vs. over-inclusion) showed the only significant correlation with a diagnosis (paranoid schizophrenia), $r = -.24$, $p < .05$, one tailed, indicating paranoid schizophrenics tend to form narrow category widths (more rigid cognitive structures). The reactive-process dimension correlated only with age ($r = .40$, $p < .01$) which was interpreted as being an artifact of the Ullmann-Giovannoni Process

Reactive Scale.

Together these studies tend to support the view that paranoid schizophrenics have more rigid or fixed cognitive structures than do non-paranoid schizophrenics. These differences tend to be blurred during acute or reactive stages of schizophrenic psychosis. This blurring in itself may account for failure to find differences in subtype groups at the acute or reactive phase of the illness in that distinctions made between the subtypes at the acute phase may not be stable.

Delusions

The delusional research is geared towards discerning differences in delusional styles between paranoid schizophrenics and non-paranoid schizophrenics. McPherson, Buckley and Draffan (1971) hypothesized that patients having persecutory delusions would be more likely to use psychological constructs ("personality characteristics, emotional state, and abilities of people," p. 277) to understand others than would patients having less organized or "non-integration" delusions. Subjects were divided by diagnostic subtype and chronicity. Subjects were required to describe differences between pairs of photographs. The descriptions were then rated for psychological vs. nonpsychological construct content. Acute subjects showing a high level use of constructs had a higher evidence of persecutory delusions and acute subjects with low use of constructs showed lower levels of persecutory delusions, $z = 2.48$, $p < .001$. Chronic subjects showed a similar pattern, $z = 3.74$, $p < .0002$. Subjects using fewer constructs tended to

have more non-integrated as opposed to persecutory delusions, $z = 2.77$, $p < .02$. Neither the use of constructs nor delusional patterns differentiated paranoid schizophrenics from non-paranoid schizophrenics.

Similarly, Kendler (1980) found no differences between delusions described by DSM III as belonging to paranoid psychosis vs. those belonging to a diagnosis of schizophrenia. Further, Kendler found no type of delusion particular to paranoid schizophrenics. Kendler believes his data support a change from paranoid psychosis to delusional disorder in the DSM III as the latter would include types of delusions other than persecutory or jealous.

The above two studies suggest that classic persecutory delusions are as likely in non-paranoid schizophrenics as in paranoid schizophrenics. In the first study, differences in cognitive style differentiated the diagnoses best and tended to correlate more clearly with delusional style than did the assigned diagnostic label or the chronicity variables.

Discrimination Tasks

The discrimination task studies are grouped together because they all contain some component of making estimations and comparisons between two or more stimulus objects. Discrimination tasks often use reaction times as measures as well. Hypotheses are generally made in these studies based on theoretical understanding of the nature of schizophrenia and schizophrenia subtypes. These studies as well as the reaction-time studies provide the strongest evidence for drawing distinctions between diagnostic categories, because the studies do not

rely heavily on paper and pencil scales and self-report measures to obtain examples of cognitive functioning. These studies in general approximate actual day-to-day cognitive exercises to a greater degree than do the paper and pencil tests used in some of the above studies (most notably the cognitive styles, delusions, and attribution studies).

Gillis and Blevens (1978) hypothesized that paranoid schizophrenics display deficits in thought content while non-paranoid schizophrenics display deficits in thought control. In a direct assessment of the control/content theory, Gillis and Blevens (1978) hypothesized that both paranoid and non-paranoid schizophrenics would show deficits in a judgmental task but that the deficits would arise from different sources.

The task involved judging the relative values of bars on a bar graph presented on a computer screen. The knowledge or content dimension was defined as being "the extent to which the subject has correctly detected the properties of the task. Statistically, [knowledge] represents the correlation between a subject's judgments and the criterion values after each has been corrected for inconsistency (p. 589)." The control dimension was defined as the consistency of the the subject's judgmental system and was calculated statistically as "the multiple correlation between the values of the available cues and the values of the criterion . . . (p. 589)"

The result supported Gillis and Blevens' hypotheses. Nonparanoid schizophrenics performed poorly overall relative to the non-schizophrenic groups, $F(1,30) = 4.69$, $p < .05$. There were no

significant differences between the paranoid schizophrenics and the non-schizophrenics on overall performance. The paranoid schizophrenics showed more knowledge deficits than non-schizophrenics at the .06 level ($F(1,30) = 4.08$, $p < .06$) while the non-paranoid schizophrenic group showed no knowledge deficits relative to the nonschizophrenics. The non-paranoid schizophrenics showed a deficit in control relative to the non-schizophrenics, $F(1,30) = 7.26$, $p < .05$, one tailed test. The paranoid schizophrenic showed no deficits in control relative to the non-schizophrenics.

Using a galvanic skin response (GSR) as a measure of drive, Magaro (1970) found significant correlations between GSR basal levels and size estimation in chronic, poor premorbid paranoid schizophrenics ($r = .91$, $n = 5$, $p < .05$) and acute, poor premorbid paranoid schizophrenics ($r = .57$, $n = 15$, $p < .05$). Magaro summarized his data by stating that both acute-poor and chronic-good paranoids increase size estimation with increases in drive while the acute-poor and chronic-good nonparanoids show decreases in size estimation as drive increases. Magaro attributes these differences in drive-size estimation errors to differences in the perceptual organization between the two diagnostic subtypes.

Magaro and Page (1983) set out to differentiate the role of inter-hemispheric brain disconnection in paranoid and non-paranoid schizophrenics. Using a tachistoscope, paired stimuli were presented to the left and right brain hemisphere (right or left eye) and to both hemispheres in a sentence-stimulus matching task. Subjects (paranoid schizophrenics, non-paranoid schizophrenics, normal controls and non-

schizophrenic psychiatric controls) were required to identify the stimuli which were presented in three categories: shapes, faces and letters. The percent of correctly identified stimuli were calculated for each group of subjects on each set of stimuli across the three conditions (right, left or both hemispheres). Non-paranoid schizophrenics demonstrated a clear left hemisphere deficit in relation to all other groups that was independent of the type of stimuli presented, (Duncan Multiple Range Test Critical Difference = .10, Observed Difference = .11, $p < .05$). Paranoid schizophrenics did not exhibit any hemisphere deficit when compared to both control groups indicating more similarity with normals and less similarity to non-paranoid schizophrenics. However, a major fault in this study is that presenting stimuli to one eye is not equivalent to presenting stimuli to the opposite brain hemisphere as each hemisphere receives stimulation from half of each eye. This makes the data difficult if not impossible to interpret.

Silverman (1964) hypothesized that, consistent with paranoid delusions and hypervigilance, paranoid schizophrenics tend to overincorporate data from their visual fields. Silverman had paranoid and non-paranoid schizophrenics match the size of a disk with a variable circle of light. Silverman hypothesized that the paranoid schizophrenic group would underestimate the size of the disks due to over-scanning ("repeatedly look[ing] back and forth from one segment of a visual field to other segments of the field" [p. 385]) the beam of light and that the non-paranoid schizophrenic group would overestimate size due to under-

scanning. Earlier studies had shown that over-scanning leads to under-estimation of size and underscanning leads to over-estimation of size. The results showed this to be true and that the difference between the two groups was highly significant ($p \leq .0025$). Post-hoc analysis of the data suggested a further difference between acute and chronic paranoid schizophrenics.

Neale, Davis, and Cromwell (1971) ran a replication study of Silverman's experiment but added the dimensions of chronicity and premorbid adjustment and a normal control group to the study. In addition, Neale et al. standardized the distance between subjects and the light stimulus to control for accommodation effects and used a false pupil to control for pupil size differences. Neale et al. failed to find any differences between subject groups and suspected the failure was related to the difference in stimulus distance in Silverman's study.

Ritzler (1977) hypothesized that schizophrenics have poorer proprioception than do non-psychotics. Ritzler divided subjects by premorbid adjustment and by diagnostic subtype. He used three separate experiments, a weight discrimination task, an arm flexion task (matching the angle of one arm to the other without the aid of sight), and a kinesthetic figural aftereffects task (estimating the diameter of a rod after moving the fingers along another rod). Evidence for impairment in weight discrimination were found for poor nonparanoid schizophrenics and poor non-schizophrenic subjects on the weight discrimination, $F(7,144) = 2.36$, $p < .05$, and arm flexion, $F(7,72) = 2.43$, $p < .05$. Poor proprioception was found to be more related to severity of pathology

than to a schizophrenic diagnosis.

The discrimination experiments taken as a whole tend to draw distinctions between severity of pathology more than diagnosis. Some evidence for diagnostic subtype differences exist but these seem to be less clear than the differences found in different levels of chronicity and premorbid adjustment.

Distraction Studies

The prominent feature of distraction studies is that they assess schizophrenic cognitive performance in the presence of distracting stimuli. Finkelstein (1983) ran distraction comparisons between paranoid schizophrenics, non-paranoid schizophrenics, patient controls and normal controls, where the distraction consisted of irrelevant digits in a digit memory task. The non-paranoid schizophrenics were significantly more distractable than both control groups, $p < .05$. The paranoid schizophrenics were significantly more distractable than the patient controls ($p < .05$) and approached being significantly more distractable than the normal controls ($p < .06$). The non-paranoid schizophrenics were slightly more distractable ($p < .10$) than the paranoid schizophrenics which occupied a middle position with respect to the normal and patient control groups. While paranoid schizophrenics tend to take in too much data when focused on a given task as in Silverman's (1964) study (see page 25), Finkelstien's study supports the idea that they are less susceptible to non-task, irrelevant distractions than non-paranoid schizophrenics. Heilbrun & Norbert (1971) found that paranoid schizophrenics were significantly more distracted than non-

paranoid schizophrenics on a cognitive discrimination task when a tape of a mother chastening a son was played in the background, $t(29) = 2.21$, $p < .025$, one tailed. This type of distraction can be seen as more relevant to the paranoid schizophrenic than the non-paranoid schizophrenic than the type of distraction used in the Finkelstein (1983) study. It appears that the effects of distraction on the two subtypes appear to be a function of the relevancy of the distraction to the task, the relevancy of the distraction to the subject's pathology, and the over or under-inclusive style of the subject.

In two verbal memory tasks, Sengel, Lovallo, and Pishkin (1985) measured the effect of distraction on non-paranoid schizophrenics, paranoid schizophrenics, manic controls and normal controls using a word list memorization task with three levels of distracters (peg board task, arithmetic task, and five word distracter list memory task, listed in ascending level of distraction). The non-paranoid schizophrenics and manics were significantly more distractable at high levels than the other groups ($F(1,48) = 25.08$, $p < .0005$) but the other groups did not differ from each other. The paranoid schizophrenics and normals were not significantly impaired by any level of distraction. In a second study, the same subjects memorized a sentence and then were given either a moderate distracter (arithmetic task) or a high distracter (learning another sentence). In the second study, the non-paranoid schizophrenics showed significant impairment under the high distraction condition relative to all other groups, $F(4,48) = 6.74$, $p < .001$.

The distraction studies tend to support a view that paranoid

schizophrenics are more like normals in their ability to screen out white noise or non-essential environmental stimuli. Non-paranoid schizophrenics appear to be easily distracted by white noise. The mother-censure distraction (Heilbrun & Norbert,1971) can be viewed as being more relevant than irrelevant to paranoids as it has more meaning both affectively and cognitively than do the white noise distracters. Even though the distractor was irrelevant to the task, it was not irrelevant to the paranoid schizophrenics and so they included it in their attention, lowering their performance on the experimental task. This type of distractor is comparable to the over-inclusive style in Silverman's study (1964) where the paranoid schizoprhenics took in too much of the relevant information presented to them. The distraction studies show paranoid schizophrenics to have more organized cognitive functioning and better control of thought than non-paranoid schizophrenics who are distracted by non-task, non-meaningful data.

Language Study

One study on language processing was found in the literature that separated paranoids from non-paranoid schizophrenics (Grove & Andreasen, 1985). The study used two paradigms from psycholinguistics. The first involves embedding a click sound in a certain location within a sentence and then having the subject estimate where the click came in the sentence. Normal subjects tend to place the click between major clausal transition points within the sentence. Thus the click paradigm becomes a measure of the degree to which subjects process syntactically. The second study was a memory for the gist (meaning) of the sentence rather

than memory for the exact sentence. Control measures were taken to ensure that deficits found were attributable to cognitive deficits and not to low task motivation. No differences from non-psychiatric norms were found for any of the experimental groups (manic, schizoaffective, paranoid schizophrenics, and non-paranoid schizophrenics). Using these two measures no language deficit was found for the psychiatric subjects. However, no attempt was made to assess severity of pathology in this study and it is probable that schizophrenics in an acute state would not be able to complete this task.

Reaction-Time Studies

In general, reaction-time studies use differences in the time it takes to complete tasks as evidence of differential cognitive processing styles. Generally, slower reaction-times indicate processing deficits. Under different conditions, diagnostic subtypes are expected to react differently (i.e., slower or faster) than each other and normals. Four stages of cognitive processing are evident in the literature (Lyons & Fulkerson, 1984). These are encoding, comparison, decisional or response selection, and response execution. Different studies are geared to assess deficits in reaction-times at different stages in processing information.

In a well designed reaction-time experiment, Dobson and Neufeld (1982) hypothesized that paranoid symptoms would lead to slower reaction-times in identifying the operant rules in a card sorting task. They hypothesized that the subjective judgments (perceived intelligence or friendliness in schematic faces) in earlier reaction-time experiments

failed to assess how the schizophrenic subtypes would react when objective criteria are required to make decisions.

The task that Dobson and Neufeld imposed was to identify the rule in effect for the inclusion or exclusion of a card in a sorting task. The cards contained various combinations of shapes (circle, square and cross), colors (red, black, green), number of shapes (1 to 3), and number of borders (1 to 3). Subjects (20 each of paranoid schizophrenics, non-paranoid schizophrenics and normals) were required to discover the rule in effect, articulate the rule and obtain 10 consecutively correct card selections. Three rule types were used: conjunctive, a unique combination of attributes (e.g., red squares); inclusive disjunctive, items with one or both of two attributes (e.g., red items, square items or items which are both red and square); and biconditional, requiring a unique combination (red squares) or the exclusion of both attributes constituting the unique combination (green crosses, black circles, etc.)

The most significant findings from this experiment were that paranoid schizophrenics did in fact have slower reaction times in identifying the rule in operation regardless of the type of rule in effect, $p < .01$. These slower reaction times were interpreted as difficulties by the paranoids in holding the various stimulus components of the task constant while deciphering which components were the focus of the rule. In other words, "relative to other groups, the paranoid schizophrenics were slower in implementing information which conveyed the 'objective significance' of stimulus dimensions (p. 620)." This is

in keeping with the theory that paranoids have difficulty with content of thought (knowledge) and non-paranoid schizophrenics have difficulty with control of thought.

Neufeld (1977) conducted a study in which paranoid and non-paranoid schizophrenics and normals were required to assess the correctness (true or false) of a sentence description of paired tachistoscope stimuli. Accuracy data as well as reaction-time information was recorded for each subject. Paranoid schizophrenics were found to be slower in responding to the stimulus than either non-paranoid schizophrenics or normals.

Lyons & Fulkerson (1984) hypothesized that paranoid schizophrenics would show an information processing deficit relative to non-paranoid schizophrenics. Subjects were required to assess if a stimulus card was the same as or different from an object card. The cards were presented using a tachistoscope. Each card consisted of white and black squares. The object card, which remained constant throughout the experiment was 50% filled in with black squares. The stimulus cards contained varying percentages of black to white, the black squares being distributed on the card randomly. It was hypothesized that processing deficits (length of reaction-time) would increase as the black percentage of the stimulus card approached 50%. Paranoid schizophrenics were found to have larger reaction-times than non-paranoids that approached significance only for the difficult stimuli (stimuli close to 50%), $p < .06$. The nonparanoid schizophrenics were found to be insensitive to the difficulty level of the stimulus cards.

In a simple reaction-time experiment (reaction to a tone), Payne

and Caird (1967) hypothesized that subjects defined as overinclusive (inability to filter out irrelevant stimuli while engaged in a task) would react significantly slower than non-overinclusive subjects in direct proportion to the level of background distractions. Further, they hypothesized that paranoid schizophrenics would be represented more frequently in the overinclusive group than would non-paranoid schizophrenics and non-schizophrenics. Finally, it was suggested that paranoid schizophrenics would have poorer reaction times in general than the other subject groups.

The overinclusive subjects were found to be significantly slower than the nonoverinclusive subjects, $p < .01$, but the interaction of overinclusion and distraction was not significant. However, there was a higher percentage of paranoid schizophrenics than non-paranoid schizophrenic in the overinclusive group (62%), $\chi^2 = 7.56$, $p < .01$) and the paranoid schizophrenics did perform significantly poorer on the reaction-time tasks as the amount of background distraction became greater (levels of significance ranging from non-significant for low levels of distraction to $p < .01$ for high levels of distraction).

Yates & Korboot (1970) hypothesized that non-paranoid schizophrenics would be significantly slower in perceptual functioning than would paranoid schizophrenics. Subjects were divided by chronicity as well as subtype and chronic and acute neurotics were used as controls. Subjects were given control over the length of presentation (inspection time) of a stimulus. After viewing the stimulus the subjects were required to report the number of stimulus objects

presented. Stimulus objects consisted of cards with lines, words and symbols, each varying from one to five elements on each card. The chronic nonparanoid group performed more slowly than all other groups (the group dimension being significant at the .01 level) with the exception of acute nonparanoid schizophrenics when verbal stimuli were used.

The reaction-time experiments tend to show the paranoids as being slower than non-paranoid schizophrenics in internal processing possibly because of the complexity of organization and the rigidity of thinking that is necessary to maintain delusional beliefs. Non-paranoid schizophrenics on the other hand appear to be slower at perception than do non-paranoids.

Hospitalization Data

In a 1974 study, Strauss, Sirotkin and Grisell looked at differential hospitalization patterns between paranoid and non-paranoid schizophrenics at the Lafayette Clinic in Michigan. Strauss et al. hypothesized that the distinction between paranoid and nonparanoid schizophrenics was a large potential source of sampling bias in studies comparing acute and chronic schizophrenics. They found that paranoid schizophrenics tended to be less chronic than non-paranoid schizophrenics. Specifically, paranoid patients were found to have lower rates of recidivism than non-paranoid schizophrenics ($F(1,62) = 4.6205$, $p < .05$. The length of hospitalization was significantly lower for paranoids ($F(1,45) = 7.4846$, $p < .01$) Strauss et al. concluded that due to these hospitalization patterns "paranoids are underrepresented in

samples of long-term schizophrenics because of differential retention and readmission experience for paranoid and nonparanoid schizophrenics" (p. 108). "First admission paranoids and readmitted nonparanoids have the shortest and longest durations of hospitalization, respectively" (p. 109).

Goldstein (1978) correlated the level of pre-morbid adjustment with paranoid symptomatology in schizophrenics. Instead of using the simple good-bad levels of adjustment, Goldstein differentiated 5 levels of adjustment. A linear trend between premorbid adjustment and paranoid symptoms was found, $p < .005$. Those with the poorest pre-morbid adjustment showed the lowest level of paranoid symptoms. Paranoid symptoms were represented more frequently at higher levels of adjustment. The highest levels of premorbid adjustment contained approximately equal numbers of subjects displaying paranoid symptoms as those displaying mixed or no paranoid symptoms.

Kendler, Gruenberg, and Tsuang (1985) set out to assess the stability of subtype diagnoses in hospitalized schizophrenics. Kendler et al. divided up hospitalization and follow-up data into three categories: group 1 included all patients, group 2 inlcuded all patients except those diagnosed as residual or latent at follow-up, and group three inlcuded only patients that were given a subtype diagnosis at follow-up. Groups 1 and 2 showed modest correlations when uncorrected for interrater reliability and diagnostic error ($r < .3$). However, stability for the third group was quite high ranging from $r = .56$ to $r = 1.00$. The paranoid subtype showed the highest level of

stability regardless of the type of diagnostic system used (Research Diagnostic Criteria, DSM III, or ICD-9).

The hospitalization and premorbid adjustment data are provided as a backdrop for evaluating both the above research as well as the question of changing the schizophrenia diagnostic categories. In general paranoid schizophrenics tend to have less severe pathology than do non-paranoid schizophrenics.

Methodological Critique

Perhaps the biggest difficulty in conducting schizophrenia research is in subject selection and inclusion. Unlike studies of cognitive functions in general, schizophrenia subtype research cannot be conducted with truely randomized selection from the population or randomized assignment to treatment groups. The assignment to treatment groups is done based on the preexistence of pathology and the interpretation of that pathology via diagnosis by the researchers. This makes the subject inclusion criteria or method of diagnosis crucial to a good study.

Because the presence of schizophrenia or a schizophrenic subtype cannot be manipulated, many schizophrenic studies use a correlational approach in establishing relationships and distinctions between subtypes. Without good inclusion criteria, and sometimes even with it, it is difficult to interpret the results of this type of research. When the inclusion criteria are not clearly stated or are largely subjective, one cannot be sure if experimental differences are due to actual differences in the subjects (i.e., attributable to the subtype of schizophrenia) or due to an artificial distinction made in assigning

subjects to groups. Similarly, non-significant results in studies with poor inclusion criteria may be attributable to homogeneous groups rather than similarities between subtypes. At least some of the variance between subtype groups on any given variable is explainable by the subtype inclusion criteria which may or may not be relevent to the subtype diagnosis.

It is for this reason that the better studies in schizophrenia subtyping are those that state clearly what the subject inclusion criteria are and strive for rigorous diagnoses in setting up subtype experimental groups. By being rigorous, the studies help to keep diagnostic subtypes "pure," and by stating their criteria, the studies give us something meaningful by which we can interpret the results. In a sense the same questions that are being asked about diagnostic schemata in this paper, must be addressed each time a careful study on schizophrenic research is conducted.

For the purposes of the discussion section of this paper, all of the studies were sorted based on methodological strength. Generally, this was based on the strength of the inclusion criteria. Studies not stating inclusion criteria or relying solely on clinical judgement were excluded. A few studies were excluded based on inadequate sample sizes, weak statistical reporting, or confounded variables such as confounding chronicity with subtype. The following studies show methodological strength and have a bearing on the subsequent discussion section: Klinka and Papageorgis, (1984); Gillis and Blevens, (1978); Magaro, (1970); Ritzler, (1977); Finkelstein, (1983); Sengal, Lovallo, and Pishkin,

(1984); Sengal, Lovallo, and Pishkin, (1985); Grove and Andreasen, (1985); Dobson and Neufeld, (1982); Lyons and Fulkerson, (1984); Yates and Korboot, (1970); Strauss, Sirotkin and Grisell, (1974); Goldstein, (1985); and Kendler, Gruenberg and Tsuang (1985). The majority of these studies are from 1980 or later, reflecting a growing concern in specifying diagnostic criteria in the literature.

Discussion

Several trends are evident based on this sample of research. First, the severity of pathology is sometimes a more important factor than diagnostic subtype in drawing distinctions between schizophrenics. This is particularly true for the associative studies. In the weaker studies there was some evidence that chronicity or severity of pathology could become confused with diagnositic subtype. The hospitalization data showed that paranoid schizophrenics tend to have less severe pathology than non-paranoid schizophrenics, suggesting that subtypes could easily be confounded with severity.

A second trend is that paranoid schizophrenics have characteristically more rigid, organized schematic structures than do non-paranoid schizophrenics. Many of the deficits found in paranoid schizophrenics relative to non-paranoid schizophrenics center around this issue. In discrimination and reaction time tasks, paranoid schizophrenics appear to make errors associated with this more rigid cognitive style. Reaction times are often slowed down particularly on judgment tasks as opposed to perception tasks. The deficits are in keeping with the hypothesis that paranoid schizophrenic spend more time

processing data in order to maintain consistency with internal schemata rather than taking more time because of inability to process or a lack of skill in making choices and decisions. Conversely, non-paranoid schizophrenics tend to make errors in perception or taking in data, and seem to have a less rigid style in processing the data that they take in. Both groups show deficits when compared to normals on reaction and discrimination task.

The distraction studies can be viewed as being consistent with non-paranoid schizophrenics having less rigid cognitive structures as they are more susceptible to white noise distractions while the paranoid schizophrenics are more susceptible to schematically meaningful distractions. This thought rigidity hypothesis is also congruent with the hospitalization data which suggest that paranoid schizophrenics in general suffer from less severe thought disturbances (shorter and less frequent hospitalization with longer periods of remittance) than do non-paranoid schizophrenics.

A third trend supports the hypothesis that paranoid schizophrenics were shown to have deficits in content of thought (knowledge) while non-paranoid schizophrenics were shown to have deficits in thought process (control of thought). This fits very well with definitions of paranoia where a delusional system is fundamental to the disorder and to the above trend for paranoid schizophrenics to have a more rigid cognitive style. A paranoid experiencing delusions can be said to be thinking clearly (good control, no loose associations) but to have poor reality testing in the content of the delusions (i.e., the delusions do not

match up with external reality).

Distinctions between the two subtypes in the way they perceive or take in data fit well with classic theoretical definitions. The research indicates that paranoid schizophrenics are overinclusive and do not limit their perceptual field as most people do. This style of perception is congruent with the suspiciousness and distrust that paranoid schizophrenics display and fits theoretical definitions of paranoia. The underinclusive style of the non-paranoid schizophrenic is congruent with the withdrawn characteristics of the disorder. Paranoid schizophrenics tend to be able to interact with the external world more readily than do non-paranoid schizophrenics even though the paranoid schizophrenic's conceptions of the external world are highly distorted. Non-paranoid schizophrenics show distortions in reality testing as well but are less able to interact with the external world. The non-paranoid subtypes of schizophrenia, namely, catatonic, hebephrenic, and undifferentiated fit this withdrawn schema more clearly than does the paranoid schizophrenic.

A fourth trend is that paranoid schizophrenics tend to be less chronic and higher functioning than do non-paranoid schizophrenics. This trend is congruent with the relatively rigid cognitive style of the paranoid schizophrenic discussed above. Although treatment of paranoid schizophrenics is extremely difficult it can be viewed as more hopeful than treatment of non-paranoid schizophrenics. In research the need for careful evaluation of chronicity and degree of pathology is paramount if data on schizophrenics are to be kept uncontaminated and diagnostic

groups pure.

Proposed Changes in the Diagnostic Schemata

It appears that changes in the current diagnostic schemata as represented by the DSM III are warranted. First, the suggestion that paranoia as a schizophrenia subtype be dropped does not seem to be supported by the data. There appear to be enough similarities between the two thought disorders and enough differences from less pathological groups (eg. neurotics) to keep paranoia as a schizophrenic subtype. However clinicians should keep in mind that subtype differentiation will be most difficult at admission time when the patient is more likely to show disintegration or decompensation in thought processes and subtype differences are most obscure. Unfortunately, this is when the majority of diagnoses are made. The mere presence of a suspicious delusion may not be enough to diagnose a subtype. The DSM III's limits on duration (six months) for a diagnosis of schizophrenia seem warranted in light of the above data.

The data do seem to support a change towards viewing paranoia as a spectrum disorder. Such a spectrum should range from paranoid personality (lacking a true delusion but including extraordinary suspiciousness and distrust), to paranoid delusional disorder (paranoia with a delusion), to paranoia with psychotic features (paranoia with gross distortions of reality beyond those in the delusion) to paranoia with hallucinations. The chronicity and severity variables tend to support a spectrum diagnostic system where a range of severity could be included in the diagnosis as well as the primary symptom manifestation.

The spectrum system could reflect the degree of rigidity of thought as well as delusional content. A spectrum diagnosis would simply be more accurate in describing clients than the current discrete category system is. Further, a spectrum diagnostic system could be normed much the way personality or intellegence measures are normed increasing the reliability of diagnosis.

The expected benefits of these changes would be a better conceptual understanding of paranoid symptoms with the realization that pathology can change along the spectrum as external stresses change (DSM III psychosocial stressors, American Psychiatric Association, 1980, pp. 26-28) and as the course of the illness progresses. This fits the view that pathology is not static, a view consistent with the effects of chronicity in the research. Though the DSM III attempts to be atheoretical, the spectrum allows for clearer theoretical understanding of paranoia by showing the dynamic relationship (changing severity) between the different expressions of paranoia.

By placing persons with paranoid symptoms on the continuum, clinicians would be better able to make accurate statements about the prognosis of treatment. This would help to avoid the therapeutic nihilism that Goldstein spoke of (1985, p. 150). It could conceivably lead to differences in pharmacological forms of treatment as well as differences in conventional inpatient psychotherapy. A better fit between treatment, prognosis and diagnosis could be made by more accurately describing the severity of the illness along the spectrum and by plotting the change in the illness along the spectrum.

Finally, by keeping paranoid subjects together in a spectrum of disorders, research inclusion criteria could be refined. This would allow finer distinctions between research groups and would presumably lead to a better understanding of paranoia and how the different levels of pathology are related. The spectrum could include the variables of chronicity, the process-reactive dimension and premorbid adjustment, which are currently missing in DSM III or are spread out across different axes implying orthogonality across symptoms.

Future Research

The most obvious need for research in this area are comparisons between different forms of paranoia. There is a big void in studies comparing paranoid personality with paranoid psychosis and paranoid schizophrenia. Such research could greatly expand our understanding of the spectrum approach and aid in establishing its validity. It would also aid in establishing treatments for the various levels of the spectrum so that the most appropriate treatment would be given. Such research would also aid in the establishment of a paranoid spectrum diagnostic system. It is likely that the relative rarity of psychotic non-schizophrenic paranoids contributes to the lack of research in this area. Again a spectrum diagnosis might aid in stimulating such research.

More studies of good quality are needed studying the process of projection in paranoid psychotics and schizophrenics. Such research would aid in understanding how delusional systems are created and how best to treat them. Projection and its companion, denial, are

fundamental to the definition of paranoia and, to date, have not been studied adequately in people diagnosed with paranoid symptoms. Projection research could further our understanding of distinctions between paranoid vs. non-paranoid schizophrenics.

Finally, research is needed on the differences and similarities of hallucinatory behavior of paranoid and non-paranoid schizophrenics. Since this is currently the primary distinction between paranoid psychosis and paranoid schizophrenia, information on the subject is greatly needed.

References

American Psychiatric Association (1952). Diagnostic and Statistical Manual of Mental Disorders, Washingtion, D.C.: American Psychiatric Association.

American Psychiatric Association (1980). Diagnostic and Statistical Manual (3rd ed.), Washington, D.C: American Psychiatric Association

American Psychiatric Association (1968). Diagnostic and Statistical Manual of Mental Disorders (2nd ed). Washington, D.C.: American Psychiatric Association.

Bonime, W. (1982). The paranoid and the depressive: dynamic correlations. Contemporary Psychoanalysis, 18, 556-574.

Brennan, J. H., & Hemsley, D. R. (1984). Illusory correlations in paranoid and non-paranoid schizophrenia. British Journal of Clinical Psychology, 23, 225-226.

Cameron, N. (1963). Personality development and psychopathology: A dynamic approach. Boston: Houghton Mifflin Company.

Carpenter, W., & Stephens, J. (1979). An attempted integration of information relevant to schizophrenia subtypes. Schizophrenia Bulletin, 5, 490-506.

Cromwell, R., & Pithers, W. (1981). Schizophrenic/paranoid psychoses: Determining diagnostic divisions. Schizophrenia Bulletin, 7, 674-688.

Dobson, D. J., & Neufeld, R. W. (1982). Paranoid-nonparanoid schizophrenic distinctions in implementing external conceptual constraints. Journal of Nervous & Mental Disease, 170, 614-621.

Finkelstein, R. J. (1983). Distractibility among paranoid and non-paranoid schizophrenics using subtests matched for discriminating power. The British Journal of Clinical Psychology, 22, 237-244.

Gillis, J. S., & Blevens, K. (1978). Sources of judgmental impairment in paranoid and nonparanoid schizophrenics. Journal of Abnormal Psychology, 87, 587-596.

Goldstein, M. J. (1978). Further data concerning the relation between premorbid adjustment and paranoid symptomatology. Schizophrenia Bulletin, 4, 236-243.

Goldstein, W. N. (1985). An introduction to the borderline conditions. New York, N. Y.: Jason Aronson,Inc.

Grove, W. M., & Andreasen, N. C (1985). Language and thinking in psychosis: Is there an input abnormality? Archives of General Psychiatry, 42, 26-32.

Hamlin, R. M., & Lorr, M. (1971). Differentiation of normals, neurotics, paranoids, and nonparanoids. Journal of Abnormal Psychology, 77, 90-96.

Hay, A., & Forrest, A. (1972). The diagnosis of schizophrenia and paranoid psychosis: An attempt at clarification. British Journal of Medical Psychology, 45, 233-241.

Heilbrun, A. B., & Norbert, N. (1971). Sensitivity to maternal censure in paranoid and nonparaoid schizophrenics. The Journal of Nervous and Mental Disease, 152, 45-49.

Kendler, K. S. (1980). Are there delusions specific for paranoid disorders vs. schizophrenia? Schizophrenia Bulletin, 6, 1-3.

Kendler, K. S. (1984). Paranoid (delusional disorder): A valid psychiatric entity? Trends in Neurosciences, 7(1), 14-17.

Kendler, K. S., Gruenberg, A. M. & Tsuang, M. T. (1985). Subtype stability in schizophrenia. American Journal of Psychiatry, 142, 827-832.

Klein, D. N. (1982). Relation between current diagnostic criteria for schizophrenia and the dimensions of premorbid adjustment of paranoid symptomatology. Journal of Abnormal Psychology, 91, 319-325.

Klinka, J., & Papageorgis, D. (1984). Thought disorder in hospitalized and nonhospitalized chronic schizophrenic and nonpsychiatric patients. Canadian Journal of Behavioral Science, 16, 130-143.

Lazar, B. S (1985). Paranoid and nonparanoid schziophrenia: Drive dominated thinking and thought pathology at two phases of disorder. Journal of Clinical Psychology, 41, 145-151.

Lyons, M. J., & Fulkerson, S. C (1984). Decisional processing in paranoid and non-paranoid schizophrenics. Perceptual and Motor Skills, 58, 591-601.

MacKinnon, R. A., & Michels, R. (1971). The psychiatric interview in clinical practice. Philadelphia: W. B. Saunders Company.

Magaro, P. (1981). The paranoid and the schizophrenic: The case for distinctive cognitive style. Schizophrenic Bulletin, 7, 632-661.

Magaro, P. (1980). Cognition in schizophrenia and paranoia. Erlbaum Associates, Hillsdale: N.J.

Magaro, P. A. (1970). An hypothesis concerning the relation between drive and size estimation for paranoids and nonparanoids within specific schizophrenic subgroups. Perceptual and Motor Skills, 31, 489-490.

Magaro, P. A., & Page, J. (1983). Brain disconnection, schizophrenia, and paranoia. Journal of Nervous & Mental Disease, 171 (3), 133-140.

McPherson, F. M., Buckley, F., & Draffan, J. (1971). "Psychological" constructs and delusions of persecution and "non-integration" in schizophrenia. Journal of Medical Psychology, 44, 277-280.

Meissner, W. W. (1978). The paranoid process. New York: Aronson.

Moore, N. I. (1971). Cognitive styles and the schizophrenias and charater disorders. Perceptual and Motor Skills, 33, 475-482.

Munro, A. (1982). Paranoia revisited. British Journal of Psychiatry, 141, 344-349.

Neale, G. J. M., Davis, D., & Cromwell, R. L. (1971). Size estimation in schizophrenia: Some additional controls. Perceptual and Motor Skills, 32, 363-367.

Neufeld, R. W. J. (1977). Components of processing deficit among paranoid and nonparanoid schizophrenics. Journal of Abnormal Psychology, 86, 60-64.

Payne, R. W., & Caird, W. K. (1967). Reaction time, distractibility, and over-inclusive thinking in psychotics. Journal of Abnormal Psychology, 72, 112-121.

Ritzler, B. A. (1977). Proprioception and schizophrenia: A replication study with nonschizophrenic patient controls. Journal of Abnormal Psychology, 86, 501-509.

Sengel, R. A., Lovallo, W. R., & Pishkin, V. (1984). Associative response bias and severity of thought disorder in schizophrenia and mania. Journal of Clinical Psychology, 40, 889-892.

Sengel, R. A., Lovallo, W. R., & Pishkin, V. (1985). Verbal recall in schizophrenia: Differential effect of retroactive interference in nonparanoid patients. Comprehensive Psychiatry, 26, 164-174.

Shaver, K. G., Payne, M. R., Bloch, R. M., Burch, M. C., Davis, M. S., & Shean, G. D. (1984). Logic distortion: Attributions of causality and responsibility among schizophrenics. Journal of Social and Clinical Psychology, 2, 193-214.

Silverman, J. (1964). Scanning-control mechanism and cognitive filtering in pananoid and non-paranoid schiophrenia. Journal of Consulting Psychology, 28, 383-393.

Strauss, M. E., Sirotkin, R. A., & Grisell, J. (1974). Length of hospitalization and rate of readmission of paranoid and nonparanoid schizophrenics. Journal of Consulting and Clinical Psychology, 42, 105-110.

Watson, C. G. (1976). The relationship of the process/reactive, paranoid/nonparanoid, length of illness, and length of hospitalization dimensions to schizophrenic abstract thinking deficits. The Journal of Nervous and Mental Disease, 163, 334-340.

Yates, A. J., & Korboot, P. (1970). Speed of perceptual functioning in chronic nonparanoid schizophrenics. Journal of Abnormal Psychology, 76, 453-461.

Zigler, E., & Glick, M. (1984). Paranoid schizophrenia: An unorthodox view. American Journal of Orthopsychiatry, 54, 43-70.